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U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards

GUIDE FOR THE IMPLEMENTATION OF FEDERAL INFORMATION PROCESSING STANDARDS (FIPS) IN THE ACQUISITION AND DESIGN OF COMPUTER PRODUCTS AND SERVICES

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Tachnology and Innovation
NATIONAL BUREAU OF STANDARDS, Ernest Amblar, Diractor

Foreword

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Faderal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving tha utilization and management of computers and automatic data processing in the Federal Government. To carry out the Secretary's responsibilities, the NBS, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance and coordination of Government efforts in tha development of guidelines and standards in these areas.

Comments concerning Federal Information Processing Standards Publications are welcomed and should be addressed to the Director, Instituta for Computar Sciences and Technology, National Bureau of Standards, Washington, DC 20234.

James H. Burrows, Diractor
Instituta for Computer Sciences
and Technology

Abstract

This Guide provides information about tha 67 FIPS publications currantly in effect and identifies the computer products and services to which they may apply. This Guide is intended to serve as a supplemental reference in tha use of approved standards and guidelines. It should prove useful in the preparation of specifications for computer systems, components, services and supplies.

This Guide serves as a checklist to assure that tha propar standards ara incorporated in planned acquisitions and in solicitation documants. Industry vendors and suppliers should find this Guide usaful in the design of equipment and services that must conform to Federal Governmant procurement requirements.

KEY WORDS: Automated data processing (ADP); communications; Federal Information Processing Standard (FIPS); Federal Managemant Regulations (FPMR); procurement; telecommunications; standards.

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FIPS PUB 80

GUIDE
FOR THE IMPLEMENTATION
OF
FEDERAL INFORMATION
PROCESSING STANDARDS (FIPS)
IN THE ACQUISITION & DESIGN
OF
COMPUTER PRODUCTS & SERVICES

PUBLICATIONS IN PROCESS

At the time that this publication was submitted for printing the following standards and guidelines were in various stages of approval and publication. These will be included in the next revision to this Guide.

FIPS-PUB	Title
68	Minimal BASIC
69	FORTRAN
70	Representation of Geographic Point Locations for Information Interchange
71	Advanced Data Communications Control Procedures (ADCCP)
72	Guideline for Measurement of Remote Batch Computer Service
73	Guidelines for Security of Computer Applications
74	Guidelines for Implementing and Using the NBS Data Encryption Standard (DES)
75	Guideline on Constructing Benchmarks for ADP System Acquisition
76	Guideline for Planning and Using a Data Dictionary System
77	Guideline for Planning and Management of Data-base Applications
78	Guideline for Implementing Advanced Data Communications Contol Procedures (ADCCP)
79	Magnetic Tape Labels and File Structure
81	DES Modes of Operation
82	Guideline for Inspection and Quality Control for Alphanumeric COM
83	Guideline on User Authentication Techniques for Computer Network Access Control
84	Microfilm Readers

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Federal Information Processing Standards (FIPS) are developed and issued by the National Bureau of Standards (NBS) under the Brooks Act and other Federal legislative authorities. The Brooks Act has as its goal improved Government productivity through better utilization and more competitive procurement of computer resources. NBS responsibilities under this Act also include technical assistance to Federal agencies in solving computer-related problems and applying computer standards effectively.

This guide provides basic information about the 67 FIPS that are in effect and identifies the computer products and services to which they may apply. The official applicability statement is contained in each FIPS. This guide is intended to serve as a supplemental reference in the use of approved standards and guidelines. Its purpose is to assist Federal agency personnel who prepare requirements and specifications for computer systems, components, services, and supplies.

The guide is arranged for use as a checklist to assure that the proper standards are incorporated into agency planning for new acquisitions and are cited in the solicitation documents themselves (purchase orders, requests for proposals, and invitations for bid). Additionally, computer vendors and manufacturers may find this information about the applicability of FIPS helpful in the design of equipment, software and services that conform to Federal requirements.

The seven sections of this guide include the following information:

Section 1 is an index of computer products and services that are commonly used in specifications and catalogs. When more than one name can be used to identify an item, cross references are provided.

Section 2 lists ADP items and identifies the standards that may be applicable to each item. FIPS guidelines which provide advisory guidance related to each item are also listed and indicated by an asterisk (*).

Section 3 lists the FIPS currently in effect in numerical order and provides date of issue, the associated voluntary industry standard if applicable, and an abstract for each FIPS.

Section 4 contains the standard terminology prescribed by Paragraph 101-36.13 of the Federal Property Management Regulations for citing FIPS in solicitation documents.

Section 5 contains a listing of the key words contained in the titles of FIPS along with the identification of each FIPS that has the key word in its title.

Section 6 provides a listing of voluntary industry standards and documents that have been adopted for Federal use. The associated FIPS PUB number is also indicated.

Section 7 provides a listing of each FIPS that is applicable to the acquisition of computer products and services, along with the paragraph/section reference as contained in the Federal Property Management Regulations (FPMRs).

Questions concerning Federal Information Processing Standards, this guide, or its use may be addressed to:

Office of ADP Standards Administration
Institute for Computer Sciences and Technology
National Bureau of Standards
Room B-64, Technology Building
Washington, DC 20234
Telephone: (301) 921-3157

Information about applying and implementing FIPS is contained in the individual publications which may be ordered singly or in quantity from:

National Technical Information Service (NTIS)
U.S. Department of Commerce
Springfield, VA 22161
Telephone: (703) 487-4650

Requests for subscriptions may be sent to:

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Springfield, VA 22161
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	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
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	Code for Information Interchange (ASCII)	1
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ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
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	Aids for Program COBOL Conversion (FIPS 21 and 21-1)	43*
	COBOL Pocket Guide	47*
Punch card equipment	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
Punched card to magnetic tape converters	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
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	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
Punched paper tape to magnetic tape converters	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50
	Perforated Tape Code for ASCII	2
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	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
Source data collection systems	OCR Character Sets	32
	Character Set for Handprinting	33
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
	Perforated Tape Code for ASCII	2
	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
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	Character Set for Handprinting	33
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 8its	35
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
	Guideline for Selection of Data Entry Equipment	67*

ADP ITEM	APPLICABLE STANDARDS	FIPS
Text editors	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
Word processing systems	OCR Character Sets	32
	Code for Information Interchange (ASCII)	1
	Implentation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
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	Character Structure and Parity Sense for Serial-By-Bit Data Communication in ASCII	17-1
	Character Structure and Parity Sense for Parallel-By-Bit Data Communication in ASCII	18-1
	Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment	22-1
	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communications Equipment	37
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	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
	Guidelines for Describing Information Interchange Formats	20*
	Guideline for Selection of Data Entry Equipment	67*

ABSTRACTS OF FEDERAL INFORMATION PROCESSING STANDARDS (FIPS)

SECTION 3

GENERAL PUBLICATIONS

GENERAL DESCRIPTION OF THE FEDERAL INFORMATION PROCESSING STANDARDS REGISTER, FIPS-PUB-0, 196B November 1.

Establishes the Federal Information Processing Standards Register as the official source within the Federal government for information pertaining to the approval, implementation, and maintenance of FIPS. Defines responsibilities for development and maintenance of Register, and for the content and format of FIPS.

FEDERAL INFORMATION PROCESSING STANDARDS INDEX, FIPS-PUB-12-2, 1974 December 1.

Provides information of Federal Information Processing Standards Publications (FIPS PUBS), national and international standards for information processing, and Federal policies and guidelines on computers and telecommunications. This publication is being revised.

OBJECTIVES AND REQUIREMENTS OF THE FEDERAL INFORMATION PROCESSING STANDARDS PROGRAM, FIPS-PUB-23, 1973 February 15.

Explains the legislative mandate for the computer standards program and establishes objectives and requirements for the program in six areas. This publication is being revised.

STANDARDIZATION OF DATA ELEMENTS AND REPRESENTATIONS, FIPS-PUB-28, 1973 December 5.

Defines policies and responsibilities for a government-wide program for the standardization of data elements and representations used in Federal automated data systems.

INTERPRETATION PROCEDURES FOR FEDERAL STANDARD COBOL, FIPS-PUB-29, 1974 June 30.

Establishes procedures for users of COBOL and vendors of COBOL compilers to follow when questions arise as to the meaning of language specifications of the Federal Standard Cobol.

GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS, FIPS-PUB-34, 1975 January 1.

Establishes requirements for use of International System of Units in all FIPS PUBS.

HARDWARE STANDARDS

Character Recognition

OPTICAL CHARACTER RECOGNITION SETS, FIPS-PUB-32, 1974 August 15.

Defines the optical and dimensional properties of the shape patterns forming Optical Character Recognition (OCR) characters and the basic requirements for the position of OCR characters on the paper substrate. Establishes two character sets, a 92 character font designed for maximum machine efficiency in reading and a 96 character font designed for esthetic appearance.

CHARACTER SET FOR HANDPRINTING, FIPS-PUB-33, 1974 October 1.

Specifies shapes and sizes of handprinted characters to be used in Optical Character Recognition (OCR) systems. Adopts ANS X3.45-1974.

GUIDELINE FOR OPTICAL CHARACTER RECOGNITION FORMS, FIPS-PUB-40, 1976 May 1.

Provides information on the design, preparation, acquisition, and application of OCR forms in data entry systems.

Data Entry Equipment

GUIDELINE FOR SELECTION OF DATA ENTRY EQUIPMENT, FIPS-PUB-67, 1979 September 30.

Provides information about the general characteristics of data entry equipment. Discusses the factors to be taken into consideration in the selection of efficient and economical data entry systems.

Interchange Codes and Media

CODE FOR INFORMATION INTERCHANGE, FIPS-PUB-1, 1968 November 1.

Establishes a standard coded character set for information interchange between information processing systems, communications systems, and related equipment. Adopts ANS X3.4-1978. Supplemented by FIPS 7.

PERFORATED TAPE CODE FOR INFORMATION INTERCHANGE, FIPS-PUB-2, 1968 November 1.

Specifies the representation of the Code for Information Interchange on perforated tape and similarly encoded media used for interchange of information between office machines, data processing and communications systems. Adopts ANS X3.6-1965. Supplemented by FIPS 7.

RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (800 CPI, NRZI), FIPS-PUB-3-1, 1973 June 30.

Specifies the recorded characteristics of 9-track, one-half inch wide magnetic tape and the data format for representing the Code for Information Interchange. Adopts ANS X3.22-1973. Supplemented by FIPS 7.

IMPLEMENTATIDN OF THE CDDE FDR INFORMATION INTERCHANGE AND RELATED MEDIA STANOARDS, FIPS-PUB-7, 1969 Merch 7.

Explains the scope of application of the Code for Information Interchange, instructions for implementing it, and its use in computer and telecommunications applications. Supplements FIPS 1, 2 end 3-1.

RECTANGULAR HDLES IN TWELVE-RDW PUNCHED CARDS, FIPS-PUB-13, 1971 October 1.

Specifies the size, location, end dimensional tolerances of rectenguler holes in 12-row, 3-1/4 inch wide punched cards. This stendard epplies to card reeding end punching equipment used in dete processing, communications end releted functions. Adopts ANS X3.21-1967.

HDLLERITH PUNCHED CARD COOE, FIPS-PUB-14, 1971 October 1.

Specifies the hole patterns to represent the 128 characters of the Federal Code for Information Interchange in 12-row, 8D column, rectangular hole punched cards. This standard is applicable when subsets of the standard code are used as specified in FIPS 15. Adopts ANS X3.26-197D.

SUBSETS DF THE STANDARD CDOE FDR INFDRMATIDN INTERCHANGE, FIPS-PUB-15, 1971 October 1.

Provides for three standard subsets of the Standard Code for Informetion Interchenge for use in printers, display devices, punched cerd equipment and other date processing or communication equipment thet do not require the full 12B standard character subset.

RECDROED MAGNETIC TAPE FDR INFDRMATIDN INTERCHANGE (1600 CPI, PHASE ENCDDED), FIPS-PUB-25, 1973 June 3D.

Provides specifications for formet end recording of the Standard Code for Information Interchange on 1/2 inch, 9-track magnetic tepe. Adopts ANS X3.39-1973.

DNE-INCH PERFORATED PAPER TAPE FOR INFDRMATION INTERCHANGE, FIPS-PUB-26, 1973 June 3D.

Specifies the width and thickness of one-inch perforated paper tepe; the locations end size of feed holes and information holes. Adopts ANS X3.18-1967.

TAPE-UP REELS FDR DNE-INCH PERFDRATED TAPE FDR INFDRMATIDN INTERCHANGE, FIPS-PUB-27, 1973 June 3D.

Specifies the physical characteristics and dimensions for both small diameter and large diameter drive take-up (or storage) reels, with either fixed or separable flanges. Adopts ANS X3.2D-1967.

CDDE EXTENSIDN TECHNIQUES IN 7 OR B 8ITS, FIPS-PUB-35, 1975 June 1.

Specifies methods for extending the 7-bit Code for Information Interchenge in either a 7-bit environment or an 8-bit environment. Adopts ANS X3.41-1974.

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GRAPHIC REPRESENTATION OF THE CONTROL CHARACTERS OF ASCII, FIPS-PUB-36, 1975 June 1.

Specifies graphical representetion for 34 ANCII cherecters which ere not indiceted in FIPS 1. Adopts ANS X3.32-1973.

RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE, 6250 CPI (246 CPM), GROUP CODED RECORDING, FIPS-PUB-50, 197B Februery 1.

Specifies formet end recording requirements for representing the Code for Informetion Interchange on nine-channel, one-helf inch magnetic tepe. This standard applies to recording and reproducing equipment opereting at densities of 6250 characters per inch. Adopts ANS X3.54-1976.

MAGNETIC TAPE CASSETTES FOR INFORMATION INTERCHANGE (3.810 MM (0.150 IN) TAPE AT 32 BPMM (800 BPI), PE), FIPS-PUB-51, 1978 February 1.

Specifies the physicel, magnetic, and recorded characteristics of e 3.B10 mm (0.150 in) magnetic tape cessette et e recording density of 32 bits per millimeter (800 bits per inch) using phese encoding techniques. Adopts ANS X3.48-1977.

RECORDED MAGNETIC TAPE CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED, FIPS-PUB-52, 197B July 15.

Specifies formet and recording requirements for representing the Code for Information Interchange on 6.30 mm wide magnetic tape cartridges with either one, two or four serial data tracks. This stendard applies to recording end reproducing equipment operating et densities of 63 bits per millimeter. Adopts ANS X3.56-1977.

COMPUTER OUTPUT MICROFORM (COM) FORMATS AND REDUCTION RATIOS, 16MM end 105 MM, FIPS-PUB-54, 197B July 15.

Specifies the imege arrangement, size and reduction ratios for 16 mm and 105 mm microforms generated by computer output microfilmers. This stendard epplies to systems using business-oriented fonts similar to line printer output.

Interface

I/O CHANNEL INTERFACE, FIPS-PUB-60-1, 1979 August 27.

Defines the functional, electrical, and mechanical and interface specificetions for connecting computer peripheral equipment as part of automatic data processing systems. This standerd and FIPS PUB 61, Channel Level Power Control Interface, define the hardwere characteristics for the I/O (input/output) channel level interface. Adopts American National Standards Institute Document X3T9/600, Revision 2.

CHANNEL LEVEL POWER CONTROL INTERFACE, FIPS-PUB-61, 1979 February 16.

Defines the functional, electricel end mechanicel interface specificetions for a power control interface for use in connecting computer peripheral equipment as part of automatic date processing systems. This standard is appliceble whenever use of FIPS 60-1 is required. Adopts American National Standards Institute Document X3T9/666, Revision 2.

OPERATIONAL SPECIFICATIONS FOR MAGNETIC TAPE SUBSYSTEMS, FIPS-PUB-62, 1979 February 16.

Defines the operational specifications for connecting magnetic tape equipment as part of automatic data processing systems. This standard applies to acquisition of magnetic tape equipment whenever use of FIPS PUB 60-1 and 61 are required. Adopts American National Standards Institute Document X3T9/7B0, Revision 3.

OPERATIONAL SPECIFICATIONS FOR ROTATING MASS STORAGE SUBSYSTEMS, FIPS-PUB-63, 1979 August 27.

Defines the operational specifications for connecting rotating mass storage equipment as part of automatic data processing systems. This standard applies to acquisition of rotating mass storage equipment whenever use of FIPS PUB 60-1 and 61 are required. Adopts American National Standards Institute Document X3T9/B4B, Revision 2.

Transmission

BIT SEQUENCING OF THE CODE FOR INFORMATION INTERCHANGE IN SERIAL-BY-BIT DATA TRANSMISSION, FIPS-PUB 16-1, 1977 September 1.

Specifies the method for transmitting the Standard Code for Information Interchange in serial-by-bit, serial-by-character data transmission. Adopts ANS X3.15-1976.

CHARACTER STRUCTURE AND CHARACTER PARITY FOR SENSE FOR SERIAL-BY-BIT DATA COMMUNICATION IN CODE FOR INFORMATION INTERCHANGE, FIPS-PUB 17-1, 1977 September 1.

Specifies the character structure and sense of character parity for serial-by-bit, serial-by-character data communication for the Standard Code for Information Interchange. Adopts ANS X3.16-1976.

CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE, FIPS-PUB 18-1, 1977 September 1 .

Specifies the character structure and character parity sense for transmitting the Code for Information Interchange in systems employing parallel-by-bit data transmission. Adopts ANS X3.25-1976.

SYNCHRONOUS SIGNALING RATES BETWEEN DATA TERMINAL AND DATA COMMUNICATION EQUIPMENT, FIPS-PUB 22-1, 1977 September 1.

Specifies the rates of transferring binary encoded information in synchronous serial or parallel form between data processing terminal and data communications equipment that employ voice band communications facilities. Adopts ANS X3.1-1976.

SYNCHRONOUS HIGH SPEED DATA SIGNALING RATES BETWEEN DATA TERMINAL EQUIPMENT AND DATA COMMUNICATIONS EQUIPMENT, FIPS-PUB-37, 1975 June.

Specifies the rates for transferring synchronous binary encoded information between data processing terminal and data communication equipment on wide band communication channels. This standard complements FIPS 22-1. Adopts ANS X3.36-1975.

SOFTWARE STANDARDS

Documentation

DICTIONARY FOR INFORMATION PROCESSING, FIPS-PUB-11-1, 1977 September 30.

A basic reference document containing definitions end explenetions for terms used in the field of computers and information processing. Adopts ANS X3/TR-1-77.

GUIDELINES FOR DESCRIBING INFORMATION INTERCHANGE FORMATS, FIPS-PUB-20, 1972 March 1.

Identifies end defines the physicel end logicel cheracteristics of formetted informetion to improve interchange, processing, and use.

FLOWCHART SYMBOLS AND THEIR USAGE IN INFORMATION PROCESSING, FIPS-PUB-24, 1972 June 30.

Prescribes and defines flowchert symbols to represent the sequence of operetions, the flow of data, end the flow of peperwork on flowcharts for information processing; prescribes presentation techniques for flowchert symbols on flowcharts; prescribes end defines the use of flowchart symbols.

SOFTWARE SUMMARY FOR DESCRIBING COMPUTER PROGRAMS AND DATA SYSTEMS, FIPS-PUB-30, 1974 June 30

Establishes a stendard form to be used by Federel egencies in documenting summaries or abstracts of progrems end autometed deta systems

GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS, FIPS-PUB-38, 1976 Februery 15.

Provides basic guidence for the preparation of ten document types that are used in the development of computer software. Can be used as e checklist for the planning and eveluation of software documentetion practices.

COBOL CODING FORM, FIPS-PUB-44, 1976 September 1.

Specifies a standard form for Federal egencies to use in coding COBOL source programs.

TRANSMITTAL FORM FOR DESCRIBING COMPUTER MAGNETIC TAPE FILE PROPERTIES, FIPS-PUB-53, 1978 April 1.

Provides a standard form for Federal agencies to use in documenting the physical properties end charecteristics of a recorded magnetic tape file.

GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS FOR THE INITIATION PHASE, FIPS-PUB-64, 1979 August 1.

Provides guidance in determining the content end extent of documentation for initietion phese of the softwere life cycle. Covers preparation of project request, feasibility study, end cost/benefit analysis documents.

Programming Languages

COBOL, FIPS-PUB-21-1, 1975 December 1.

Establishes tha form for and the interpretation of programs expressed in Federal Standard COBOL. Adopts ANS X3.23-1974.

INTERPRETATION PROCEDURES FOR FEDERAL STANDARD COBOL, FIPS-PUB-29, 1974 June 30.

Establishes the procedures for users of COBOL and vendors of COBOL compilers to follow when questions arise as to the meaning of language specifications of the Federal Standard COBOL

AIDS FOR COBOL PROGRAM CONVERSION (FIPS PUB 21 to FIPS PUB 21-1), FIPS-PUB-43, 1975 Decambar 1.

Provides information to assist in converting COBOL source programs daveloped for compilers in conformance with the 196B COBOL Standard (FIPS 21) to use with compilers in conformance with the 1974 COBOL Standard (FIPS 21-1).

FEDERAL STANDARD COBOL POCKET GUIDE, FIPS-PUB-47, 1977 February 1.

Contains a complete language skeleton displaying syntactically correct formats for the high level of Standard COBOL. Designad to be used by programmers as a reference guide to the standard language.

DATA STANDARDS

Representations and Codes

CALENDAR DATE, FIPS-PUB-4, 1968 November 1.

Specifies codes to identify years, months and dates of the Gregorian calendar.

STATES AND OUTLYING AREAS OF THE UNITED STATES, FIPS-PUB-5-1, 1970 June 15.

Provides abbreviations and two digit numeric codes for states, the District of Columbia and outlying areas such as Puerto Rico, Virgin Islands, and other United States territories.

COUNTIES AND COUNTY EQUIVALENTS OF THE UNITED STATES, FIPS-6-3, 1979 December 15.

Provides namas and three-digit numeric codes for counties or county aquivalents in the United States.

STANDARD METROPOLITAN STATISTICAL AREAS (SMSAs), FIPS-PUB-8-4, 1974 June 30.

Provides a four-digit numaric coda for each Standard Metropolitan Statistical Area in the United States

CONGRESSIONAL DISTRICTS OF THE UNITED STATES, FIPS-PUB-9, 1969 November 14.

Specifies the use of two-digit numeric codes to represent the Congressional Districts of each State of the United States as identifiad in the "Congressional Directory."

COUNTRIES, DEPENDENCIES AND AREAS OF SPECIAL SOVEREIGNTY, FIPS-PUB-10-2, 1977 March 1.

Assigns two character alphabetic codes to 224 geopolitical entities including independent states, dependent areas, territories, possessions and areas of special sovereignty.

GUIDELINES FOR REGISTERING DATA CODES, FIPS-PUB-19, 1972 February 1.

Establishes procedures for Federal agencies to use in registering data codes and for obtaining information about codes in use and under development. The National Bureau of Standards maintains registers of data elements and codes to minimize individual agency development efforts and to facilitate the interchange of information.

GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF STANDARDS FOR THE REPRESENTATION OF COMPUTER PROCESSED DATA ELEMENTS, FIPS-PUB-45, 1976 September 30.

Provides basic concepts and tarminology of data standardization, describes data characteristics, basic coding methods, and principles of data code development.

CODES FOR NAMED POPULATED PLACES AND RELATED ENTITIES OF THE STATES OF THE UNITED STATES, FIPS-PUB-55, 1978 June 1.

Provides 7-cherecter numeric codes for places in the United States such as cities, towns, villeges, rural communities, eirports, Indien reservations, military installetions, shopping centers and transport points. Also provides the name end code for the county (counties) in which the place is loceted, the ZIP code of the servicing post office, end a cross-reference to the Worldwide Geogrephic Location Codes issued by GSA. Implements ANS X3.47-1977.

REPRESENTATIONS OF LOCAL TIME OF THE DAY FOR INFORMATION INTERCHANGE, FIPS-PUB-58, 1979 February 1.

Specifies representetions for the local time of the day based on both 12 and 24 hour timekeeping systems. Specifies the time elements and their sequencing, the use of separators between time elements, and the representation of the meridiem designator. Adopts ANS X3.47-1977.

REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS, AND UNITED STATES TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE, FIPS-PUB-59, 1979 February 1.

Specifies representations for Universal Time, the Local Time Differential Factors, and Locel Time Zones in general use in the United States. Adopts ANS X3.51-1975.

STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES, FIPS-PUB-66, 1979 August 15.

Provides clessificetions, short titles, and codes for representing industries and groups of establishments with similer economic ectivities.

ABSTRACTS OF FEDERAL INFORMATION PROCESSING STANDARDS

ADP OPERATIONS

Benchmarking for Computer Selection

GUIDELINES FOR BENCHMARKING ADP SYSTEMS IN THE COMPETITIVE PROCUREMENT ENVIRONMENT, FIPS-PUB-42-1, 1975 December 1.

Recommends good practicas for Federal agencias to usa in planning, organizing, and conducting benchmark mix damonstrations for competitive computer system procuremants.

Computer Performance Management

GUIDELINE ON COMPUTER PERFORMANCE MANAGEMENT: AN INTRODUCTION, FIPS-PUB-49, 1977 May 1.

Datails the responsibilities of ADP managers in meating usar requirements managing and planning for ADP rasources, communiceting with upper management, and communicating with vendors.

GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE COMPUTER SERVICE RESPONSE TIME AND TURNAROUND TIME, FIPS-PUB-57, 1978 August 1.

Provides a methodology for measuring interactive computar servica response time and turnaround tima. Addresses interactiva computer utilization characterizad by an interchange of input and output between a computer and a person utilizing a keyboerd terminal end describas functional performance maasures that can ba employed.

Computer Security

GUIDELINES FOR ADP PHYSICAL SECURITY AND RISK MANAGEMENT, FIPS-PUB-31, 1974 June.

Providas guidance to Federal organizations in developing physical security and risk managemant programs for thair ADP facilitias. Can be used as a checklist for planning and evaluating security of computer systems.

GLOSSARY FOR COMPUTER SYSTEMS SECURITY, FIPS-PUB-39, 1976 February 15.

A reference documant containing approximately 170 terms and definitions pertaining to privacy and computer security.

COMPUTER SECURITY GUIDELINES FOR IMPLEMENTING THE PRIVACY ACT OF 1974, FIPS-PUB-41, 1975 May 30.

Providas guidance in the selection of technical and ralated procedural methods for protecting personel data in automatad information systems. Discussas categorias of risks and tha releted safeguerds for physical security, information managemant practices, and system controls to improve system sacurity.

DATA ENCRYPTION STANDARD, FIPS-PUB-46, 1977 January 15.

Specifias and algorithm to be implamented in electronic hardware devices and usad for tha cryptographic protaction of computer date. The algorithm uniquely dafinas tha mathamatical staps raquirad to transform computer data into a cryptographic cipher and the staps requirad to transform tha cipher back to its original form.

GUIDELINES ON EVALUATION OF TECHNIQUES FOR AUTOMATED PERSONAL IDENTIFICATION, FIPS-PUB-48, 1977 April 1.

Discusses the performance of personal identification devices, how to evaluate them, and considerations for their use within the context of computer system security.

GUIDELINES FOR AUTOMATIC DATA PROCESSING RISK ANALYSIS, FIPS-PUB-65, 1979 August 1.

Presents a technique for conducting a risk analysis of an ADP facility and related assets. Provides guidance on collecting, quantifying, and analyzing data related to the frequency of occurrence and the damage caused by adverse events.

Management of Multivendor ADP Systems

GUIDELINES FOR MANAGING MULTIVENDOR PLUG-COMPATIBLE ADP SYSTEMS, FIPS-PUB-56, 1978 September 15.

Provides general assistance to Federal ADP managers responsible for the planning, acquisition, or operation of an ADP system that involves products or services obtained from multiple sources.

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CITATIONS FOR STANDARDS IN SOLICITATION DOCUMENTS

SECTION 4

Subpart 101-36.13 - Implementation of Federal Information Processing and Federal Telecommunications Standards into Solicitation Documents.

Sec.
101-36.1300 Scope of Subpart.

101-36.1301 Applicability.

101-36.1302 Federal Standards.
101-36.1302-1 Federal Information Processing Standards Publications (FIPS PUBS).
101-36.1302-2 Federal Telecommunication Standards (FED-STD).
101-36.1302-3 Joint Federal Information Processing Standards (FIPS) and Federal Telecommunication Standards (FED-STD).

101-36.1303 Definitions.
101-36.1303-1 Standard Terminology.
101-36.1303-2 Hardware Standards.
101-36.1303-3 Software Standards.
101-36.1303-4 Applications Standards.
101-36.1303-5 Data Standards.

101-36.1304 Hardware Standards.
101-36.1304-1 FIPS PUB 1, Code for Information Interchange.
101-36.1304-2 FIPS PUB 2, Perforated Tape Code for Information Interchange.
101-36.1304-3 FIPS PUB 3-1, Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI).
101-36.1304-4 FIPS PUB 7, Implementation of the Code for Information Interchange and Related Media Standards.
101-36.1304-5 FIPS PUB 13, Rectangular Holes in 12-Row Punched Cards.
101-36.1304-6 FIPS PUB 14, Hollerith Punched Card Code.
101-36.1304-7 FIPS PUB 15, Subsets of the Standard Code for Information Interchange.
101-36.1304-8 FIPS PUB 25, Recorded Magnetic Tape for Information Interchange (1600 CPI, Phase Encoded).
101-36.1304-9 FIPS PUB 26, One-Inch Perforated Paper Tape for Information Interchange.
101-36.1304-10 FIPS PUB 27, Take-up Reels for One-Inch Perforated Tape for Information Interchange.
101-36.1304-11 FIPS PUB 32, Optical Character Recognition Character Sets.
101-36.1304-12 FIPS PUB 33, Character Set for Handprinting.
101-36.1304-13 FIPS PUB 35, Code Extension Techniques in 7 or 8 Bits.
101-36.1304-14 FIPS PUB 36, Graphic Representation of the Control Characters of ASCII (FIPS 1).
101-36.1304-15 FIPS PUB 46, Data Encryption Standard (DES).
101-36.1304-16 FIPS PUB 50, Recorded Magnetic Tape for Information Interchange, 6250 CPI (246 CPMM), Group Coded Recording.
101-36.1304-17 FIPS PUB 51, Magnetic Tape Cassettes for Information Interchange (3.810 mm (0.150 in) Tape at 32 BPMM (800 BPI) , PE).
101-36.1304-18 FIPS PUB 52, Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track, 6.30 mm (0.250 in), 63 BPMM (1600 BPI) Phase Encoded.
101-36.1304-19 FIPS PUB 54, Computer Output Microform (COM) Formats and Reduction Ratios, 16 mm and 105 mm.
101-36.1304-20 FIPS PUB 60, Input/Output (I/O) Channel Interface
101-36.1304-21 FIPS PUB 61, Channel Level Power Control Interface

101-36.1304-22	FIPS PUB 62, Operational Specifications for Magnetic Tape Subsystems
101-36.1304-23	FIPS PUB 63, Operational Specifications for Rotating Mass Storage Subsystems.
101-36.1305	Software Standards.
101-36.1305-1	FIPS PUB 21-1, Federal Standard COBOL.
101-36.1305-2	FIPS PUB 24, Flowchart Symbols and Their Usage in Information Processing.
101-36.1305-3	FIPS PUB 30, Software Summary for Describing Computer Programs and Automated Data Systems.
101-36.1305-4	FIPS PUB 53, Transmittal Form for Describing Computer Magnetic Tape File Properties.
101-36.1306	Applications Standards.
101-36.1307	Data Standards.
101-36.1307-1	FIPS PUBS Applicable to the Interchange of Machine Processable Data Between and Among Agencies.
101-36.1308	Federal Telecommunication Standards (FED-STD).
101-36.1308-1	FED-STD 1002, Time and Frequency Reference Information in Telecommunications Systems.
101-36.1308-2	FED-STD 1005, Coding and Modulation Requirements for Nondiversity 2400 Bit/Second Modems.
101-36.1308-3	FED-STD 1006, Coding and Modulation Requirements for 4800 Bit/Second Modems.
101-36.1309	Joint FIPS/FED-STD.
101-36.1309-1	FIPS PUB 37/FED-STD 1001, Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment.
101-36.1309-2	FIPS PUB 16-1/FED-STD 1010, Bit Sequencing of the Code for Information Interchange in Serial-By-Bit Data Transmission.
101-36.1309-3	FIPS PUB 17-1/FED-STD 1011, Character Structure and Character Interchange.
101-36.1309-4	FIPS PUB 18-1/FED-STD 1012, Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the Code for Information Interchange.
101-36.1309-5	FIPS PUB 22-1/FED-STD 1013, Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment.

Subpart 101-36.13 - Implementation of Federal Information Processing and Federal Telecommunication Standards Into Solicitation Documents.

§101-36.1300 Scope of subpart.

This subpart provides standard terminology for use in solicitation documents for the acquisition of ADP and telecommunication equipment, services, and related software. This subpart supplements the provisions of part 101-36 and is applicable, where particular standards apply, to equipment and services acquired under part 101-37 of the FPMR and subpart 1-4.11 of the FPR.

§101-36.1301 Applicability.

The provisions of this subpart are applicable to all Federal agencies unless the agencies are otherwise excepted. Waiver procedures are prescribed in the applicable standards.

§101-36.1302 Federal Standards

Federal standards discussed in this subpart are categorized as Federal Information Processing Standards (FIPS), Federal Telecommunication Standards (FED-STD), or as Joint Federal Information Processing and Federal Telecommunication Standards (FIPS/FED-STD). Each of these standards categories is described in detail below.

§101-36.1302-1 Federal Information Processing Standards Publications (FIPS PUBS).

Federal Information Processing Standards Publications (FIPS PUBS) are official Federal Government publications relating to standards adopted and issued under the provisions of section 111 of the Federal Property and Administrative Services Act of 1949, 63 Stat. 383, as amended, 40 U.S.C. 759 and Executive Order 11717 (3 CFR). These publications are issued by the National Bureau of Standards (NBS) and collectively constitute the Federal Information Processing Standards Register. As an aid in implementing this subpart 101-36.13, all agencies should establish and maintain a register in accordance with FIPS PUB 0, General Description of the Federal Information Processing Standards Register, November 1, 1968. Requests for FIPS PUBS should be sent to:

National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, telephone 703-557-4650; FTS 557-4650.

Requests for discount prices on quantity orders should also be referred to the above address and telephone number. Requests for FIPS PUBS subscriptions should be sent to:

Subscriptions, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, telephone 703-557-4630; FTS 557-4630.

§101-36.1302-2 Federal Telecommunication Standards (FED-STD).

Federal Telecommunication Standards (FED-STD) are official Federal Government publications relating to standards adopted and issued under the provisions of section 206 of the Federal Property and Administrative Services Act of 1949, 63 Stat. 390, as amended, 40 U.S.C. 487. These Federal publications are issued by the General Services Administration and collectively constitute the Federal Supply Class (FSC) of "Telecommunications" in the Federal Standards Index. These publications are available from the General Services Administration (3FRI), Specification Branch, Building 197, Washington Navy Yard, Washington, D.C. 20407, telephone 202-472-2205; FTS 472-2205. Requests for standards must include the appropriate FED-STD number.

NOTE - Most Federal Telecommunication Standards (FED-STD) implement specifications contained in American National Standards Institute (ANSI) standards or Electronic Industry Association (EIA) standards. Addresses are referenced in the appropriate FED-STD. Federal agencies may secure one copy of each FED-STD free of charge.

§101-36.1302-3 Joint Federal Information Processing Standards (FIPS) and Federal Telecommunication Standards (FED-STD).

Joint Federal Information Processing Standards and Federal Telecommunication Standards (FIPS/FED-STD) are standards which are

published as both FIPS and FED-STD within the authorities cited in §§101-36.1302-1 and 101-36.1302-2. Either the FIPS or the FED-STD adequately addresses the joint applicability, and these standards are available as discussed in §§101-36.1302-1 and 101-36.1302-2.

§101-36.1303 Definitions.

The following definitions are applicable to subpart 101-36.13. For terms not defined, see the FIPS PUB 11-1, American National Standard Vocabulary for Information Processing, available as discussed in §101-36.1302-1, and the Military Communications System Standards, Terms, and Definitions (MIL-STD-188-120), available as discussed in §101-36.1302-2.

§101-36.1303-1 Standard terminology.

"Standard terminology" means that language which is used in purchase agreements, solicitations, and offers for acquisitions of ADP and telecommunication equipment, services, and related software to ensure conformance with Federal Information Processing and Federal Telecommunication Standards.

§101-36.1303-2 Hardware standards.

"Hardware standards" means that category of standards which includes areas of standardization such as character recognition, interchange codes and media, transmission, interface, and keyboards.

§101-36.1303-3 Software standards.

"Software standards" means that category of standards which includes areas of standardization such as programing languages, operating systems, operating procedures, and documentation.

§101-36.1303-4 Applications standards.

"Applications standards" means that category of standards which includes areas of standardization such as payroll, flowcharting, and data base management.

§101-36.1303-5 Data standards.

"Data standards" means that category of standards which includes areas of standardization such as data elements, data formats, and data representations and data codes.

§101-36.1304 Hardware standards.

This section provides standard terminology for use in the procurement of ADPE and gives effect to the applicable FIPS PUBS covering areas of standardization listed in §101-36.1303-2.

§101-36.1304-1 FIPS PUB 1, Code for Information Interchange.

(a) FIPS PUB 1 promulgates the American Standard Code for Information Interchange (ASCII) and specifies the code and character set for use in Federal information processing systems, communications systems, and associated equipment. (Technical specifications of the standard are not included with FIPS PUB 1.)

(b) The standard terminology for use in solicitation documents is:

ASCII SYSTEM REQUIREMENTS

The system, upon receiving a hardware or software command, must accept data on magnetic tape, paper tape, or any other input media covered by an approved Federal Information Processing Standards Publication (FIPS PUB) in ASCII code and collating sequence prescribed in FIPS PUB 1 and in the format prescribed in FIPS PUBS 2, 3, or other applicable FIPS PUBS. Such data may be translated, if necessary, into a form upon which the proposed equipment can internally process: "Provided", That, upon receiving a hardware or software command, the output of the processed data to magnetic tape, paper tape, and other output media will be in the ASCII code and collating sequence prescribed in FIPS PUB 1 and in the format prescribed in FIPS PUBS 2, 3, or other applicable FIPS PUBS.

§101-36.1304-2 FIPS PUB 2, Perforated Tape Code for Information Interchange.

(a) FIPS PUB 2 specifies the representation of the ASCII code and format on perforated tape to be used in Federal information processing systems, communications systems, and associated equipment. (Technical specifications of the standard are not included with FIPS PUB 2.)

(b) The standard terminology for use in solicitation documents is:

PUNCHED PAPER TAPE READERS AND PUNCHES

Punched paper tape equipment must be capable of reading and punching in the prescribed ASCII code and format specified in FIPS PUBS 1 and 2.

§101-36.1304-3 FIPS PUB 3-1, Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI).

(a) FIPS PUB 3-1 supersedes FIPS PUB 3, reflects a change in scope from the earlier version of X3.22-1967, and encompasses the recorded tape requirements only. The unrecorded tape standard will include the requirements for the physical property of the tape and reels that were previously included in FIPS 3. FIPS PUB 3-1 specifies the recorded characteristics of 9-track digital 1/2-inch-wide magnetic computer tape, including the data format for implementing the Federal Standard Code for Information Interchange at the recording density of 800 characters per inch (CPI). (Technical specifications of the standard are not included with FIPS PUB 3-1.)

(b) The standard terminology to be used in solicitation documents is:

All 9-track digital magnetic tape recording and reproducing equipments resulting from this solicitation employing 1/2-inch-wide tape at the recording density of 800 characters per inch (CPI), including associated

programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in FIPS PUB 3-1.

§101-36.1304-4 FIPS PUB 7, Implementation of the Code for Information Interchange and Related Media Standards.

(a) FIPS PUB 7 supplements FIPS PUBS 1, 2, and 3 and provides details concerning their implementation and applicability. (Technical specifications of a standard are not required in connection with FIPS PUB 7.)

(b) The standard terminology for use in solicitation documents: Not applicable.

§101-36.1304-5 FIPS PUB 13, Rectangular Holes in 12-Row Punched Cards.

(a) FIPS PUB 13 specifies the size and location of rectangular holes in 12-row 3 1/4-inch-wide punched cards. The standard applies to card reading and punching equipment used in data processing, communications, and similar operations. It does not apply to other types of equipment such as those which punch round holes or cards of other width dimensions. (Technical specifications of the standard are not included with FIPS PUB 13.)

(b) The standard terminology for use in solicitation documents is:

All punching or reading equipment utilizing 12-row 3 1/4-inch-wide punched cards used in data processing, communications, and similar operations must be capable of punching and reading rectangular holes of a size and location specified in FIPS PUB 13.

§101-36.1304-6 FIPS PUB 14, Hollerith Punched Card Code.

(a) FIPS PUB 14 specifies the representation of the Federal Standard Code for Information Interchange, FIPS PUB 1, in 12-row 3 1/4-inch-wide, rectangular hole, punched cards used in Federal information processing systems, communications systems, and associated equipment. This standard does not apply to other types of punched cards such as those with round holes or to "edge-punched" cards whose holes resemble those used in perforated tape. (Technical specifications of the standard are not included with FIPS PUB 14.)

(b) The standard terminology for use in solicitation documents is:

All punching or reading equipment utilizing 12-row 3 1/4-inch-wide, rectangular hole punched cards used in data processing, communications, and similar operations must be capable of punching or reading the Federal Standard Code for Information Interchange, FIPS PUB 1, or one of the approved Subsets of the Standard Code for Information Interchange, FIPS PUB 15, in the hole pattern specified in FIPS PUB 14, Hollerith Punched Card Code.

§101-36.1304-7 FIPS PUB 15, Subsets of the Standard Code for Information Interchange.

(a) FIPS PUB 15 amends FIPS PUB 7 and requires that all printers, display devices, punched card, and other data processing or communications

equipment brought into the Federal inventory which utilize a character set less than that provided by the 128-character set of FIPS PUB 1 must conform to one of the three subsets provided in FIPS PUB 15. (Technical specifications of the standard are included with FIPS PUB 15.)

(b) The standard terminology for use in solicitation documents is:

Printers; display devices; data acquisition, preparation, and transcription devices; data communication terminal devices; punched card equipment; and other data processing or communications equipment that may result from this solicitation not requiring the full 128-character set of the Federal Code for Information Interchange, FIPS PUB 1, must conform to one of the approved character Subsets of the Standard Code for Information Interchange, FIPS PUB 15. Printers of the "chain" or "train" or other replaceable symbol technology may also be provided with optional subsets having a different number of characters than those specified in FIPS PUB 15 in order to increase the printer's repertoire of symbols or the printer's speed as required for local use, provided the ability to interchange information by the selected character subset (FIPS PUB 15) is retained in the data processing system.

§101-36.1304-8 FIPS PUB 25, Recorded Magnetic Tape for Information Interchange (1600 CPI, Phase Encoded).

(a) FIPS PUB 25 specifies the recorded characteristics of 9-track digital 1/2-inch-wide magnetic computer tape, including the data format for implementing the Federal Standard Code for Information Interchange at the recording density of 1600 characters per inch (CPI). (With one exception that is cited in FIPS PUB 25, technical specifications of the standard are contained in American National Standard X3.39-1973, Recorded Magnetic Tape for Information Interchange (1600 CPI, PE).)

(b) The standard terminology for use in solicitation documents is:

All 9-track digital magnetic tape recording and reproducing equipment resulting from this solicitation and employing 1/2-inch-wide tape at the recording density of 1600 characters per inch (CPI, phase encoded), including associated programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in FIPS PUB 25.

§101-36.1304-9 FIPS PUB 26, One-Inch Perforated Paper Tape for Information Interchange.

(a) FIPS PUB 26 specifies the physical dimensions and tolerances of 1-inch-wide paper tape, including the size and location of the perforations used for recording information. (Technical specifications of the standard are contained in American National Standard X3.18-1974, One-Inch Perforated Paper Tape for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All 1-inch-wide perforated paper tape and related 8-channel paper tape punch and reading equipment which result from this solicitation and are utilized in Federal information processing systems, communication systems, and associated terminals employing perforated paper tape equipment shall provide the capability to accept and generate tapes in compliance with the requirements set forth in FIPS PUB 26.

§101-36.1304-10 FIPS PUB 27, Take-up Reels for One-Inch Perforated Tape for Information Interchange.

(a) FIPS PUB 27 specifies the physical dimensions of paper tape take-up (or storage) reels with either fixed or separate flanges. The two types of reels specified differ in the size and shape of the drive hub, but both are intended for use with 1-inch perforated paper tape devices. (Technical specifications of the standard are included in FIPS PUB 27.)

(b) The standard terminology for use in solicitation documents is:

All 1-inch perforated tape takeup reels and related devices employing such reels, including paper tape readers, punches, and related tape handling equipment, which result from this solicitation and are used in Federal information processing systems and associated equipment employing such devices, shall provide the capability to accept one of the two types of reels specified in FIPS PUB 27.

§101-36.1304-11 FIPS PUB 32, Optical Character Recognition Character Sets.

(a) FIPS PUB 32 provides the description, scope, and identification for different character sets (OCR-A and OCR-B) to be used in the application of Optical Character Recognition (OCR) systems. (Technical specifications of the standard are contained in American National Standard X3.49-1975, Character Set for Optional Character Recognition (OCR-B).)

(b) The standard terminology for use in solicitation documents is:

All applicable Optical Character Recognition (OCR) equipment or services resulting from this solicitation must comply with the provisions of FIPS PUB 32. Applicable OCR equipment also includes data input devices such as typewriters, line printers, and CRT displays. Applicable services include data preparation and processing of information represented in OCR form.

§101-36.1304-12 FIPS PUB 33, Character Set for Handprinting.

(a) FIPS PUB 33 announces the adoption of the American National Standard X3.45-1974, Character Set for Handprinting, as a Federal standard. The standard provides the description, scope, and application rules for a character set for handprinting. (Technical specifications of the standard are contained in American National Standard X3.45-1974, Character Set for Handprinting.)

(b) The standard terminology for use in solicitation documents is:

All applicable Optical Character Recognition (OCR) equipment or services which result from this solicitation and which are capable of reading handprinted material must comply with FIPS PUB 33. The applicable services include data preparation and processing of information represented in OCR form.

§101-36.1304-13 FIPS PUB 35, Code Extension Techniques in 7 or 8 Bits.

(a) FIPS PUB 35 specifies methods of extending the 7-bit code of the Standard Code for Information Interchange (FIPS PUB 1/ASCII), remaining in a 7-bit environment or increasing to an 8-bit environment, building upon the structure of ASCII to describe various means of extending the control

and graphic sets of code. FIPS PUB 35 describes techniques for constructing codes related to ASCII to allow application-dependent usage without preventing the interchangeability of the data, and also describes 8-bit codes for general information interchange in which ASCII is a subset. (Technical specifications are contained in American National Standard X3.41-1974, Code Extension Techniques for Use with the 7-Bit Coded Character Set of the American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All coded character sets offered as a result of this solicitation which require control function and/or graphic symbols that are not included in the 128 characters of ASCII will be implemented through the use of the code extension methods and techniques as described in FIPS PUB 35.

§101-36.1304-14 FIPS PUB 36, Graphic Representation of the Control Characters of ASCII (FIPS 1).

(a) FIPS PUB 36 specifies graphical representation for the 34 characters of ASCII (FIPS PUB 1) for which a graphic representation is not indicated in FIPS PUB 1. Graphic representations are given for the 32 control functions of column 0 and 1 and for the characters "space" and "delete." Two forms of graphical representation for each of the 34 characters are provided: a pictorial symbol and a 2-letter alpha-numeric code. (Technical specifications are contained in American National Standard X3.32-1973, Graphic Representation of the Control Characters of American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment that may result from this solicitation that prints or displays graphic representations of any or all of the control characters of ASCII (FIPS PUB 1) or of the characters "space" or "delete" must comply with the requirements set forth in FIPS PUB 36. This standard also applies to equipment that prints these graphic representations on media such as perforated tape, punched cards, or listing.

§101-36.1304-15 FIPS PUB 46, Data Encryption Standard (DES)

(a) FIPS PUB 46 specifies an algorithm to be implemented in computer or related data communication devices using hardware (not software) technology. This standard shall be used by Federal agencies for the cryptographic protection of computer data when:

(1) A department or agency decides that cryptographic protection is required; and

(2) The data are not classified according to the National Security Act 1947, as amended; or the Atomic Energy Act of 1954, as amended.

(b) Federal agencies using cryptographic devices for protecting data classified according to either the National Security Act or the Atomic Energy Act can use these devices for protecting unclassified data in lieu of the standard.

(c) Technical specifications are included with FIPS PUB 46.

(d) The standard terminology for use in solicitation documents is:

In the event that a data encryption requirement is specified elsewhere in this solicitation, such encryption will be accomplished in accordance with FIPS PUB 46. Implementations of the standard embodied in products or services offered as a result of this solicitation that are asserted to have an encryption capability in conformance with FIPS PUB 46 must have the capability validated by the National Bureau of Standards prior to being proposed. Arrangements for validation may be made with the Systems and Software Division, National Bureau of Standards, Washington, D.C. 20234.

§101-36.1304-16 FIPS PUB 50, Recorded Magnetic Tape for Information Interchange, 6250 CPI (246 CPMM), Group Coded Recording.

(a) FIPS PUB 50 specifies the recording characteristics of 9-track, 1/2-inch-wide (12.7 mm) magnetic computer tape, including the format for implementing the Standard Code for Information Interchange (FIPS PUB 1/ASCII) at the recording density of 6250 characters per inch (246 characters per millimeter). (FIPS PUB 50 adopts American National Standard X3.54-1976, Recorded Magnetic Tape for Information Interchange (6250 CPI, Group Coded Recording), with one exception - paragraph 5.4.3. of X3.54-1976 should read: "Bit Z shall be zero or treated as a bit of higher order than the ASCII bits.")

(b) The standard terminology to be used in solicitation documents is:

All applicable digital magnetic tape recording and reproducing equipment which results from this solicitation and employs 1/2-inch-wide (12.7 mm) magnetic computer tape at the recording density of 6250 characters per inch (246 characters per millimeter) group-coded recording, including associated programs, shall provide the capability to accept and generate recorded tape in compliance with the requirements set forth in FIPS PUB 50.

§101-36.1304-17 FIPS PUB 51, Magnetic Tape Cassettes for Information Interchange (3.810 mm (0.150 in) Tape at 32 BPMM (800 BPI) , PE).

(a) FIPS PUB 51 specifies the physical, magnetic, and recording characteristics of a 3.810 mm (0.150 in) magnetic tape cassette in order to provide for data interchange between information processing systems at a recording density of 32 bits per millimeter (800 bits per inch) using phase encoding techniques. (FIPS PUB 51 adopts technical specifications contained in American National Standard X3.48-1977, Magnetic Tape Cassettes for Information Interchange (3.810 mm (0.150 in) Tape at 32 BPMM (800 BPI) , PE).

(b) The standard terminology to be used in solicitation documents is:

All magnetic tape cassette recording and reproducing equipment which results from this solicitation and employs 3.810 mm (0.150 in) wide magnetic tape at the recording density of 32 bits per millimeter (800 bits per inch) using phase encoding techniques, including associated programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in FIPS PUB 51.

§101-36.1304-18 FIPS PUB 52, Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track, 6.30 mm (0.250 in), 63 BPMM (1600 BPI) Phase Encoded.

(a) FIPS PUB 52 specifies the recorded characteristics for a 6.30 mm (0.250 in) wide magnetic tape cartridge with either one, two, or four serial data tracks in order to provide for data interchange between information processing systems, communication systems, and associated equipment at a recording density of 63 bits per millimeter (1600 bits per inch) using phase encoding recording techniques. This standard is one of a series of Federal standards implementing the Federal Standard Code for Information Interchange (FIPS PUB 1) on magnetic tape media. (With one exception as cited in FIPS PUB 52, technical specifications of the standard are contained in American National Standard X3.56-1977, Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track,6.30 mm (0.250 in), 63 PBMM (1600 BPI) Phase Encoded.

(b) The standard terminology for use in solicitation documents is:

All magnetic tape cartridge recording and reproducing equipment which results from this solicitation and employs 6.30 millimeter (0.250 inch) wide magnetic tape with one, two, or four independent serial data tracks at recording densities of 63 bits per millimeter (1600 bits per inch) using phase encoding techniques, including associated software, shall provide the capability to accept and generate recorded magnetic tape cartridges in the code and format as specified in FIPS PUB 1 and FIPS PUB 52.

§101-36.1304-19 FIPS PUB 54, Computer Output Microform (COM) Formats and Reduction Ratios, 16 mm and 105 mm.

(a) FIPS PUB 54 specifies the image arrangement, size, and reduction for 16 mm and 105 mm microforms generated by computer output microfilmers. It is limited to systems using business-oriented fonts similar to line printer output. The standard does not cover engineering drawings or microphotocomposition using complex graphics or graphic arts fonts and formats, nor does it cover special systems using two-step reduction techniques. (Technical specifications of the standard are included with FIPS PUB 12.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services that may result from this solicitation that produce computer generated microforms using plain type faces must be in compliance with FIPS PUB 54.

§101-36.1304-20 FIPS PUB 60, Input/Out (I/O) Channel Interface.

(a) FIPS PUB 60 defines the functional, electrical, and mechanical interface specifications for connecting computer peripheral equipment as part of automatic data processing (ADP) systems. This standard, with a companion standard for power control (FIPS PUB 61), defines the hardware characteristics for the I/O channel level interface. Two other closely related standards specify how this interface is to be used for the connection of particular classes of peripheral devices. These standards are FIPS PUB 62, Operational Specifications for Magnetic Tape Subsystems, and FIPS PUB 63, Operational Specifictions for Rotating Mass Storage Subsystems.

(b) This standard provides that FIPS PUB 60 is applicable to the acquisition of all ADP systems and peripheral subsystems acquired by the Federal Government except those minicomputer , microcomputer, and other small-scale systems that are specifically excluded by the National Bureau

of Standards (NBS). A list of these currently excluded systems and the current criteria for exclusion is developed, maintained, and periodically distributed to all Federal agencies by NBS and is publicly available from NBS upon request. The standard contains additional applicability, implementation, and waiver provisions. If waivers are applicable to a solicitation, the solicitation document shall so state. Questions regarding FIPS PUBS 60, 61, 62, or 63 may be directed to the System Component Division, A-219 Technology, National Bureau of Standards, Washington, D.C. 20234 (telephone 310-921-2705).

(c) The correct operation of all interfaces required to conform to FIPS PUB 60 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed to all Federal agencies by NBS and will be available from NBS upon request. This list will identify each interface verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(d) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as specified in FIPS PUB 60, or unless a waiver is granted following the waiver procedures specified in FIPS PUB 60, ADP systems and peripheral subsystems that may result from this solicitation, and for which operational specifications FIPS PUBS (such as FIPS PUBS 62 and 63) have been issued and are in effect, must conform to FIPS PUB 60. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-20(c). Arrangements for verification may be made according to procedures issued by the National Bureau of Standards. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of I/O Channel Level Interface Standards. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform with FIPS PUB 60 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 60. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

Note.--NBS published verification procedures regarding FIPS PUBS 60, 61, 62, and 63 on December 11, 1979 (44 FR 71444-71445) and a verification procedure checklist on February 27, 1980 (45 FR 12862).

§101-36.1304-21 FIPS PUB 61, Channel Level Power Control Interface.

(a) FIPS PUB 61 defines the functional, electrical, and mechanical interface specifications for a power control interface for use in connecting computer peripheral equipment as a part of ADP systems. This standard, with a companion standard for I/O Channel Interface (FIPS PUB 60), defines the hardware characteristics for the I/O channel level interface. This standard provides that FIPS PUB 61 is applicable whenever use of FIPS PUB 60 is required. If waivers are applicable to a solicitation, the solicitation document shall so state.

(b) The correct operation of all interfaces required to conform to FIPS Pub 61 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed by NBS and will be available from NBS upon request. This list will identify each interface

verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(c) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as spedified in FIPS PUB 61 by reference to FIPS PUB 60 or unless a waiver is granted following the waiver procedures specified in FIPS PUB 61, ADP systems and peripheral subsystems that may result from this solicitation, and for which operational specifications FIPS PUBS (such as FIPS PUBS 62 and 63) have been issued and are in effect, must conform to FIPS PUB 61. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-21(b)k. Arrangements for verification may be made according to procedures issued by NBS. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of I/O Channel Level Interface Standards. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform to FIPS PUB 61 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 61. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

§101-36.1304-22 FIPS PUB 62, Operational Specifications for Magnetic Tape Subsystems.

(a) FIPS PUB 62 defines the peripheral device dependent operational interface specifications for connecting magnetic tape equipment as a part of ADP systems. It is to be used with FIPS PUB 60, I/O Channel Interace, and FIPS PUB 61, Channel Level Power Control Interface. This standard, with FIPS PUB 60 and 61, provides for full plug-to-plug interchangeability of magnetic tape equipment as a part of ADP systems. This standard provides that FIPS PUB 62 is applicable to the acquisition of all magnetic tape equipment whenever the use of FIPS PUB 60 is required. If waivers are applicable to a solicitation, the solicitation document shall so state.

(b) The correct operation of all interfaces required to conform to FIPS PUB 62 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed to all Federal agencies by NBS and will be available from NBS upon request. This list will identify each interface verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(c) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as specified in FIPS PUB 62 by reference to FIPS PUB 60 or unless a waiver is granted following the procedures specified in FIPS PUB 62, ADP systems and magnetic tape subsystems that may result from this solicitation must conform to FIPS PUB 62. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-22(b). Arrangement for verification may be made according to procedures issued by NBS. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of I/O Channel Level Interface Standards. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform to

FIPS PUB 61 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 62. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

§101-36.1304-23 FIPS PUB 63, Operational Specifications for Rotating Mass Storage Subsystems.

(a) FIPS PUB 63 defines the peripheral device dependent operational interface specifications for connecting rotating mass storage subsystems, such as magnetic disk equipment, as a part of ADP systems. It is to be used with FIPS PUB 60, I/O Channel Interface, and FIPS PUB 61, Channel Level Power Control Interface. This standard, with FIPS PUBS 60 and 61, provides for full plug-to-plug interchangeability of rotating mass storage equipment as a part of ADP systems. This standard provides that FIPS PUB 63 is applicable to the acquisition of all magnetic disk equipment whenever the use of FIPS PUB 60 is required. If waivers are applicable to a solicitation, the solicitation document shall so state.

(b) The correct operation of all interfaces required to conform to FIPS 63 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed to all Federal agencies by NBS and will be available from NBS upon request. This list will identify each interface verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(c) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as specified in FIPS PUB 63 by reference to FIPS PUB 60 or unless a waiver is granted following the waiver procedures specified in FIPS PUB 63, ADP systems and rotating mass storage subsystems that may result from this solicitation must conform to FIPS PUB 63. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-23(b). Arrangements for verification may be made according to procedures issued by NBS. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of Operational Specifications for Rotating Mass Storage Subsystems. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform to FIPS PUB 63 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 63. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

§101-36.1305 Software standards.

This section provides standard terminology for use in solicitation documents in the areas of standardization listed in §101-36.1303-3.

§101-36.1305-1 FIPS PUB 21-1, Federal Standard COBOL.

(a) FIPS PUB 21-1 specifies the use of the American National Standard Programming Language COBOL X3.23-1974 as the Federal Standard COBOL. The purpose of FIPS 21-1 is to promote a high degree of interchangeability of programs for use on a wide variety of information processing systems. All COBOL compilers brought into the Federal Government inventory and those

used to develop computer programs for the Government when providing programming services must be validated in accordance with paragraph (c).

(b) The standard terminology for use in solicitation documents is:

ACQUISITION OF COBOL COMPILERS

COBOL compilers offered as a result of the requirements set forth in this solicitation will be identified as implementing all of the language elements of at least one of the levels of Federal Standard COBOL as specified in FIPS PUB 21-1. Implementation must provide a facility for the user to optionally specify a level of Federal Standard COBOL for monitoring the source program at compile time. Monitoring may be specified for any level at or below the highest level for which a compiler is implemented and will consist of an analysis of the syntax used in a source program against the syntax included in the level specified for monitoring. Any syntax not conforming to the specified level will be identified through a diagnostic message in the source program listing. The diagnostic message will contain at least the identification of the source program line number for each nonconforming syntax and identify the level of Federal Standard COBOL that supports the syntax or indicate that the syntax is nonstandard COBOL.

ACQUISITION OF COBOL PROGRAMS AND/OR PROGRAMING SERVICES

Business-oriented computer application programs (i.e., those applications or programs that emphasize the manipulation of characters, files, and input/output as contrasted with those concerned primarily with computation of numeric values) offered or prepared as a result of the requirements set forth in this solicitation will be written using one of the levels of Federal Standard COBOL as defined in FIPS PUB 21-1 including optional language elements, if any, as specified herein. If services provided include compilation(s), compilers used to perform these services shall be validated in accordance with Federal Property Management Regulations (FPMR) 101-36.105-1(a).

(c) COBOL compilers that are asserted to conform with one or more levels specified in FIPS PUB 21-1 and are offered to the Federal Government for purchase or lease and those used to develop computer programs when providing programming services or compilations shall be validated. The term "validation" as used in this section is the process of testing a given COBOL compiler against predetermined conditions and specifying which, if any, conditions are not met.

(1) COBOL compilers which are offered or used by vendors as a result of requirements set forth by Federal agencies in solicitations must implement the language elements of a designated level of the Federal Standard COBOL. To confirm that an implementation meets the specifications of the designated level of the Federal Standard COBOL, test routines have been developed and approved for use in testing COBOL compilers. These routines are known as the COBOL Compiler Validation System (CCVS). A Federal Compiler Testing Center (FCTC) operated by the General Services Administration provides a validating service for Federal agencies.

(2) The test results for a COBOL compiler shall be used by a Federal agency to confirm that, insofar as the CCVS tests the language elements included in a designated level of Federal Standard COBOL, the compiler meets the specifications of that level of standard. When an agency has indicated a waiver to a Federal Standard COBOL specification in a

solicitation, only the portions of the language that have been waived are excluded from the validation requirements.

(3) Validations will be conducted annually for each requesting vendor as specified in the official Compiler Validation Procedures prepared by the Federal Compiler Testing Center (FCTC). (Recertification of a previous annual validation may be substituted if no errors were identified during that previous annual validation and if no changes have been made to the compiler, its supporting system software, or the CCVS in the interim.) This annual validation process is intended to reduce or eliminate the need for separate validations associated with individual agency procurements.

(4) Request for and questions on validations should be sent to: General Services Administration (CFT), Federal Compiler Testing Center, Suite 1100, 5203 Leesburg Pike, Falls Church, VA 22041.

(5) When a request for validation services requires that compiler testing be performed, the requester is responsible for providing the necessary test facilities.

(6) In response to a request for validation service, the FCTC will conduct a validation test using the CCVS and will provide a Validation Summary Report (VSR) summarizing the test results.

(7) Validation is performed on a cost-reimbursable basis. The FCTC will send the requester an estimate of validation costs for approval before beginning the validation process.

(8) Unresolved questions and/or any ambiguities that arise during compiler testing and are identified by the FCTC or by the requester shall be referred to the National Bureau of Standards in accordance with FIPS PUB 29.

(d) The standard terminology for use in solicitation documents is:

VALIDATION OF COBOL COMPILERS

In addition to the specified mandatory COBOL compiler requirements stated in the specification portion of this solicitation and those compilers used to develop programs when providing services, all COBOL compilers brought into the Federal inventory as a result of this solicitation, the most recent release of which has not been previously tested, must be tested using the official COBOL Compiler Validation System (CCVS). Validation shall be in accordance with Federal Property Management Regulation (FPMR) 101-36.1305-1(c). The results of the validation shall be used to confirm that the compiler meets the specified requirements of the designated level of FIPS PUB 21-1, Federal Standard COBOL. To be considered responsive, the vendor shall:

(i) Certify in the proposal that all COBOL compilers offered in response to this solicitation have been submitted for validation as set forth in FPMR 101-36.1305-1(c).

(ii) Agree to correct all deviations from the standard reflected in the Validation Summary Report (VSR) not previously covered by a waiver. All deviations must be corrected within 12 months from the date of contract award unless a shorter period is specified elsewhere in this solicitation. If an interpretation of the standard is required that will invoke the

procedures set forth in FIPS PUB 29, such requests for interpretations will be made within 30 calendar days after contract award.

Any corrections that are required as a result of decisions made under the procedures of FIPS PUB 29 will be completed within 12 months of the date of formal notification of the interpretation to the contractor. Failure to make required corrections within the time provisions set forth above shall be deemed a failure to deliver required software. The liquidated damages as specified for failure to deliver either operating system or other software shall apply. In addition, such failure falls within the purview of the default clause. If the required corrections are not made within the time provisions specified above, subsequent proposals submitted to the Government offering the deficient COBOL compilers or subsequent uncorrected versions thereto shall be considered nonresponsive.

§101-36.1305-2 FIPS PUB 24, Flowchart Symbols and Their Usage in Information Processing.

(a) FIPS PUB 24 establishes standard flowchart symbols and specifies their use in the preparation of flowcharts in documenting information processing systems. (Technical specifications of the standard are not included with FIPS PUB 24.)

(b) The standard terminology for use in solicitation documents is:

All new information processing system documentation involving the use of flowcharts that may result from this solicitation document must comply with FIPS PUB 24.

§101-36.1305-3 FIPS PUB 30, Software Summary for Describing Computer Programs and Automated Data Systems.

(a) FIPS PUB 30 provides for the use of Standard Form 185, Federal Information Processing Standard Software Summary, and the instructions for describing computer programs and/or automated data systems for identification purposes. (Copies of SF-185 are available as a GSA Federal supply stock item FSN 7540-118-8541.)

(b) The standard terminology for use in solicitation documents is:

All documentation of computer programs and/or automated data systems that results from this solicitation must include completed SF-185 summaries as described by FIPS PUB 30.

§101-36.1305-4 FIPS PUB 53, Transmittal Form for Describing Computer Magnetic Tape File Properties.

(a) FIPS PUB 53 provides for the use of Standard Form 277, Computer Magnetic Tape File Properties, together with the instructions for providing the necessary information on the form. The form is to be used by Federal agencies to document the physical properties and characteristics of a recorded magnetic tape file needed by the receiving agency to process the tape. (Technical specifications of the standard are contained in FIPS PUB 53.)

(b) The standard terminology for use in solicitation documents is:

All magnetic tape used to transmit coded information to the Federal

Government as a result of this solicitation must include completed Standard Forms 277 describing magnetic tape file properties as set forth in FIPS PUB 53.

§101-36.1306 Applications standards.

This §101-36.1306 is reserved for future reference to FIPS PUBS and to standard terminology for use in solicitation documents in the areas of standardization listed in §101-36.1303-4.

§101-36.1307 Data standards.

This section provides standard terminology for use in solicitation documents in the areas of standardization listed in §101-36.1303-5.

§101-36.1307-1 FIPS PUBS applicable to the interchange of machine-processable data between and among agencies.

(a) Data standards facilitate the authorized interchange of data among Federal ADP users and the collection and dissemination of data with State and local governments, industry, and the public. Agencies are also encouraged to use the approved data standards in their data systems when such use contributes to operational benefits, efficiency, or economy. (Technical specifications of the data standards identified in this §101-36.1307-1(b) are included in each FIPS PUB with the exception of FIPS PUB 9, Congressional Districts of the United States.)

(b) The standard terminology for use in solicitation documents is: All application programs (software and machine sensible data) resulting from this solicitation that have been identified as those that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement the following applicable approved Federal Information Processing Standards (FIPS):

FIPS PUB 4	Calendar Date.
FIPS PUB 5-1	States and Outlying Areas of the United States.
FIPS PUB 6-3	Counties and County Equivalents of the States of the United States.
FIPS PUB 8-4	Standard Metropolitan Statistical Areas.
FIPS PUB 9	Congressional Districts of the United States.
FIPS PUB 10-2	Countries, Dependencies and Areas of Special Sovereignty.
FIPS PUB 58	Representations of Local Time of the Day for Information Interchange.
FIPS PUB 59	Representations of Universal Time, Local Time Differentials, and United States Time Zone References for Information Interchange.
FIPS PUB 66	Standard Industrial Classification (SIC) Codes.

§101-36.1308 Federal Telecommunication Standards (FED-STD).

This section provides the standard terminology for use in solicitation documents applicable to Federal Telecommunication Standards.

§101-36.1308-1 FED-STD 1002, Time and Frequency Reference Information in Telecommunication Systems.

(a) FED-STD 1002 requires that telecommunication facilities and systems of the Federal Government use time and frequency reference information based upon coordinated universal time (UTC).

(b) The standard terminology for use in solicitation documents is:

All applicable telecommunication facilities and systems that are offered or used as a result of this solicitation shall be referenced to the time and frequency standard specified in FED-STD 1002.

§101-36.1308-2 FED-STD 1005, Coding and Modulation Requirements for Nondiversity 2400 Bit/Second Modems.

(a) FED-STD 1005 establishes the coding and modulation requirements for 2400 bit per second modems owned or leased by the Federal Government for use over analog transmission channels other than those derived from high-frequency radio facilities.

(b) The standard terminology for use in solicitation documents is:

All nondiversity 2400 bit per second modems that are offered or used as a result of this solicitation and are to be used on 4kHz channels derived from either switched networks or dedicated lines must comply with FED-STD 1005.

§101-36.1308-3 FED-STD 1006, Coding and Modulation Requirements for 4800 Bit/Second Modems.

(a) FED-STD 1006 requires that all Federal departments and agencies shall comply with the standard in the design and procurement of telecommunication systems and equipment having a requirement for 4800 bit per second modems used with nominal 4kHz analog channels.

(b) The standard terminology for use in solicitation documents is:

All 4800 bit per second modems (and equipment containing 4800 bit per second modems) that may be proposed as a result of this solicitation for use with nominal 4kHz analog channels must comply with FED-STD 1006.

§101-36.1309 Joint FIPS/FED-STD.

This section provides standard terminology for use in solicitation documents applicable to Joint Federal Information Processing Standards and Federal Telecommunication Standards.

§101-36.1309-1 FIPS PUB 37/FED-STD 1001, Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment.

(a) FIPS PUB 37/FED-STD 1001 establishes signaling rate requirements for data terminal and data processing equipment which is (1) employed with synchronous data communication equipment and (2) designed to operate on binary encoded information over wideband communication channels having greater bandwidth than the normal 4kHz bandwidth commonly used in analog

voice transmission. (Technical specifications of the standard are contained in American National Standard X3.36-1975, Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services resulting from this solicitation that are employed with synchronous data communication equipment designed to operate on binary coded information over wideband communication channels must comply with FIPS PUB 37/FED-STD 1001.

§101-36.1309-2 FIPS PUB 16-1/FED-STD 1010, Bit Sequencing of the Code for Information Interchange in Serial-By-Bit Data Transmission.

(a) FIPS PUB 16-1/FED-STD 1010 specifies the method of transmitting the Standard Code for Information Interchange, FIPS PUB 1, in serial-by-bit, serial-by-character data transmission. FIPS PUB 16-1 supersedes FIPS PUB 16 and reflects changes necessary to accommodate FIPS PUB 1 when operating in either 7- or 8-bit coded environments. The standard is applicable to the transmission of the standard code in a serial bit stream form at the interface between data terminal equipment and data communication equipment. Data terminal equipment transmitting an approved Federal subset or superset of FIPS PUB 1 must comply with FIPS PUB 16-1/FED-STD 1010. (Technical specifications of the standard are contained in American National Standard X3.15-1976, Bit Sequencing of the American National Standard Code for Information Interchange in Serial-By-Bit Data Transmission.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services that may result from this solicitation, transmitting in a serial-by-bit, serial-by-character mode, must be capable of bit sequencing as prescribed in FIPS PUB 16-1/FED-STD 1010 for the transmission of the Standard Code for Information Interchange, FIPS PUB 1, at the interface between data terminal equipment and data communication equipment.

§101-36.1309-3 FIPS PUB 17-1/FED-STD 1011, Character Structure and Character Parity Sense for Serial-By-Bit Data Communication in the Code for Information Interchange.

(a) FIPS PUB 17-1/FED-STD 1011 specifies the method of transmitting the Standard Code for Information Interchange, FIPS PUB 1, in the serial-by-bit, serial-by-character data transmission. FIPS PUB 17-1 supersedes FIPS PUB 17 and reflects changes necessary to accommodate revisions prescribed in FIPS PUB 1 when operating in either 7- or 8-bit coded environments. The standard is applicable at the interface between data terminal equipment and data communication equipment. Data terminal equipment transmitting an approved Federal subset or superset of FIPS PUB 1 must comply with FIPS PUB 17-1/FED-STD 1011. (Technical specifications of the standard are contained in American National Standard X3.16-1976, Character Structure and Character Parity Sense for Serial-By-Bit Data Communication in the American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment that may result from this solicitation, transmitting in a serial-by-bit, serial-by-character synchronous or

asynchronous mode, must be capable of transmitting the character structure and sense of character parity prescribed in FIPS PUB 17-1/FED-STD 1011 for the transmission of the Standard Code for Information Interchange, FIPS PUB 1, at the interface between data terminal equipment and data communication equipment.

§101-36.1309-4 FIPS PUB 18-1/FED-STD 1012, Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the Code for Information Interchange.

(a) FIPS PUB 18-1/FED-STD 1012 specifies the channel assignment for transmitting the Standard Code for Information Interchange, FIPS PUB 1, in parallel-by-bit, serial-by-character data transmission. FIPS PUB 18-1 supersedes FIPS PUB 18 and reflects changes necessary to accommodate revisions prescribed by FIPS PUB 1 when operating in either 7- or 8-bit coded environments. The standard is applicable at the interface between data terminal equipment and data communication equipment. Data terminal equipment transmitting an approved Federal subset or superset of FIPS PUB 1 must comply with FIPS PUB 18-1/FED-STD 1012. (Technical specifications of the standard are contained in American National Standard X3.25-1976, Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services that may result from this solicitation, transmitting in a parallel-by-bit, serial-by-character mode, must be capable of transmitting the character structure and sense of character parity prescribed in FIPS PUB 18-1/FED-STD 1012, when transmitting the Standard Code for Information Interchange, FIPS PUB 1, or an approved Federal subset (FIPS PUB 15) at the interface between data terminal equipment and data communication equipment.

§101-36.1309-5 FIPS PUB 22-1/FED-STD 1013, Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment.

(a) FIPS PUB 22-1/FED-STD 1013 specifies the rates of transferring binary encoded information in synchronous serial or parallel form between data processing terminal and data communication equipment that employ voice band communication facilities. FIPS PUB 22-1 supersedes FIPS PUB 22 and reflects changes made to the corresponding American National Standard X3.1-1976. (Technical specifications of the standard are contained in American National Standard X3.1-1976, Synchronous Signaling Rates for Data Transmission.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services resulting from this solicitation that are employed in conjunction with synchronous data communication equipment designed to operate on binary encoded information in either serial or parallel fashion over voice grade communication channels of nominal 4kHz bandwidth must comply with FIPS PUB 22-1/FED-STD 1013.

(Sec. 205(c), 63 Stat. 390; (40 U.S.C. 486(c)))

KEY WORD INDEX OF FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS

SECTION 5

This computar-produced Index provides an alphabetical listing of the significant key words contained in the titles of Federal Information Processing Standards Publications. Listed under the key word is the title and number of each publication containing the key word which is highlighted in bold letters. This key word index is intended to provide a convenient reference for users of this guide in identifying standards publications through the association of major terms used in the titles of the publications.

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X3.4 -1968	Code for Information Interchange	FIPS PUB 1
X3.5 -1970	Flowchart Symbols and Their Usage in Information Processing	FIPS PUB 24
X3.6 -1965	Perforated Tape Code for Information Interchange	FIPS PUB 2
X3.15-1976	Bit Sequencing of the American National Standard Code for Information Interchange in Serial-By-Bit Data Transmission	FIPS PUB 16-1
X3.16-1976	Character Structure and Character Parity Sense for Serial-By-Bit Data Communication in the American National Standard Code for Information Interchange	FIPS PUB 17-1
X3.18-1967	One-Inch Perforated Paper Tape for Information Interchange	FIPS PUB 26
X3.20-1967	Take-up Reels for One-Inch Perforated Tape for Information Interchange	FIPS PUB 27
X3.21-1967	Rectangular Holes in Twelve-Row Punched Cards	FIPS PUB 13
X3.22-1973	Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI)	FIPS PUB 3-1
X3.23-1974	Programming Language COBOL	FIPS PUB 21-1
X3.25-1976	Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the American National Standard Code for Information Interchange	FIPS PUB 18-1
X3.26-1970	Hollerith Punched Card Code	FIPS PUB 14
X3.31-1973	Structure for the Identification of the Counties of the United States for Information Interchange	FIPS PUB 6-3
X3.32-1973	Graphic Representation of the Control Characters of American National Standard Code for Information Interchange	FIPS PUB 36
X3.36-1975	Synchronous High-Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment	FIPS PUB 37
X3.38-1972	Identification of States of the United States (including the District of Columbia) for Information Interchange	FIPS PUB 5-1

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X3.39-1973	Recorded Magnetic Tape for Information Interchange (1600 CPI, Phase Encoded)	FIPS PUB 25
X3.41-1974	Code Extension Techniques for Use with the 7-Bit Coded Character Set of American National Standard Code for Information Interchange	FIPS PUB 35
X3.43-1977	Representations of Local Time of the Day for Information Interchange	FIPS PUB 58
X3.45-1974	Character Set for Handprinting	FIPS PUB 33
X3.47-1977	Structure for the Identification of Named Populated Places and Related Entities of the States of the United States for Information Interchange	FIPS PUB 55
X3.48-1977	Magnetic Tape Cassettes for Information Interchange ((3.810 mm) (0.150 in) Tape at 32 BPMM (800 BPI), PE)	FIPS PUB 51
X3.51-1975	Representations of Universal Time, Local Time Differentials, and U.S. Time Zone References for Information Interchange	FIPS PUB 59
X3.54-1976	Recorded Magnetic Tape for Information Interchange (6250 CPI, Group-Coded Recording)	FIPS PUB 50
X3.56-1977	Recorded Magnetic Tape Cartridge for Information Interchange 4-Track, 0.250 Inch (6.30 mm), 1600 bpi (63 bpmm), Phase Encoded	FIPS PUB 52
X10.1-1973	Guidelines for Describing Information Interchange Formats	FIPS PUB 20
X3/TR-1-1977	Dictionary for Information Processing	FIPS PUB 11-1
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X3T9/780 Rev. 2	Operational Specifications for Magnetic Tape Subsystems	FIPS PUB 62
Z39.27-1976	Structure for the Representation of Names of Countries of the World for Information Interchange (Reference ISO Standard 3166)	FIPS PUB 10-2

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